The Technology

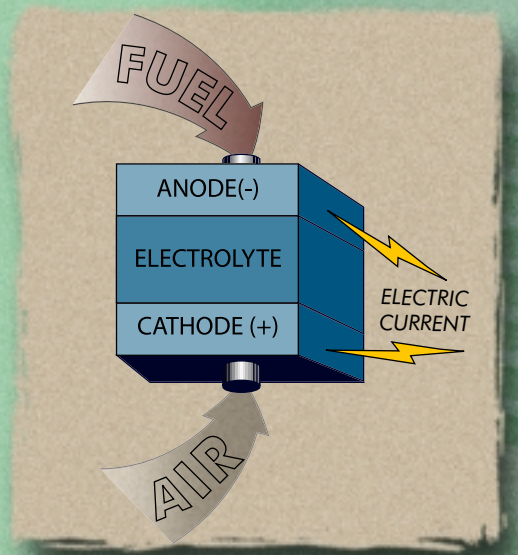
New Partial Oxidation Catalyst Reforms Fossil Fuels into Hydrogen to Power Fuel Cells

R&D 100 2001 Winner

The Goal

Using Fuel Cells to Make Clean Energy for Homes and Vehicles

A fuel cell can produce "clean" electricity to operate vehicles and electrical appliances in homes because, when powered by hydrogen, the fuel cells produce few or no harmful emissions.



The Challenge

Hydrogen Must Be Transported, Stored, or Produced On Demand

Transporting, distributing, and storing hydrogen can be difficult and expensive, because hydrogen is bulky and hard to manage safely in its natural gaseous form. Until a "hydrogen station" is available on every corner, an option is to produce hydrogen on demand to power a fuel cell in homes or vehicles.

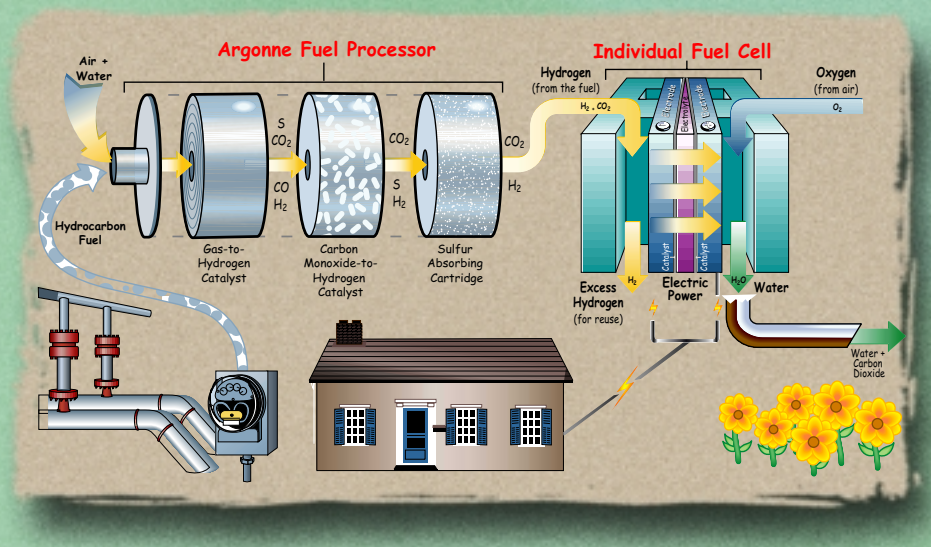
"The President's Plan directs us to explore the possibility of a hydrogen economy."

– Spencer Abraham,
Secretary of Energy

Argonne's Solution

Technology that Makes Hydrogen On Demand from Fossil Fuels

Gasoline, natural gas, propane, and other fossil fuels are hydrocarbons, which are molecules composed of hydrogen and carbon. Argonne National Laboratory has developed a new partial oxidation catalyst for use in an Argonne-developed fuel reformer (or "fuel processor") that can split the hydrogen off the carbon and then use the hydrogen to power a fuel cell. The technology means that homes and vehicles can now be powered by clean energy produced by reforming conventional fossil fuels, including gasoline.



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http://www.anl.gov/OPA/logos19-2/reformer01.htm

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